CLAIMS

What is claimed is:

1. A vehicle suspension system comprising:

a longitudinally extending vehicle frame;

a vehicle wheel assembly; and

a composite spring having a sinusoidal profile spanning said vehicle frame and said vehicle wheel assembly.

2. The vehicle suspension system of Claim 1, further comprising means for pivotally supporting said composite spring between said vehicle frame.

3. The vehicle suspension system of Claim 2, further comprising means for pivotally supporting said composite spring to said vehicle wheel assembly.

4. The vehicle suspension system of Claim 3, further comprises a parallel opposing vehicle wheel assembly and a parallel opposing extending vehicle frame, wherein said sinusoidal composite spring spans transversely between said opposing vehicle wheel assemblies and said opposing extending vehicle frames.

5. The vehicle suspension system of Claim 4, further comprising means for pivotally supporting said composite spring between said parallel opposing vehicle frame.

6. The vehicle suspension system of Claim 5, further comprising means for pivotally supporting said composite spring to said parallel opposing vehicle wheel assembly.

7. The vehicle suspension system of Claim 1, said sinusoidal composite spring further comprising a neutral axis extending the length of said spring at the midpoint of said sinusoidal shape.

8. The vehicle suspension system of Claim 7, said sinusoidal composite spring further comprising carbon fiber spanning the length of said spring at said neutral axis.

9. The vehicle suspension system of Claim 8, said sinusoidal composite spring further comprising carbon fiber spanning the length of said spring below said neutral axis.

10. The vehicle suspension system of Claim 9, said sinusoidal composite spring further comprising glass fiber spanning the length of said spring and surrounding said carbon fiber.

11. The vehicle suspension system of Claim 10, said sinusoidal composite spring further comprising a rectangular cross-section, said cross-section having an equal surface area at all points along the length of said leaf spring as measured in a plane perpendicular to said neutral axis.

12. The vehicle suspension system of Claim 11, said rectangular cross-section of said sinusoidal spring further having rounded edges, wherein each of said edges is formed of a 5/16" radius.

13. A composite spring assembly comprising:

a leaf spring having a sinusoidal-shaped length.

14. The composite spring assembly of Claim 13, said leaf spring further comprising a neutral axis extending the length of said leaf spring at the midpoint of said sinusoidal shape.

15. The composite spring assembly of Claim 14, said leaf spring further comprising carbon fiber spanning the length of said leaf spring at said neutral axis.

16. The composite spring assembly of Claim 15, said leaf spring further comprising carbon fiber spanning the length of said leaf spring below said neutral axis.

17. The composite spring assembly of Claim 15, said leaf spring further comprising glass fiber spanning the length of said leaf spring and surrounding said carbon fiber.

18. The composite spring assembly of Claim 13, said leaf spring further comprising a parabolic-shaped width.

19. The composite spring assembly of Claim 15, said leaf spring further comprising a rectangular cross-section, said cross-section having an equal surface area at all points along the length of said leaf spring as measured in a plane perpendicular to said neutral axis.

20. The composite spring assembly of Claim 19, said rectangular cross-section having rounded edges, wherein each of said edges is formed of a 5/16" radius.

21. A method for making a composite spring assembly having a sinusoidal-shaped profile for a vehicle suspension system comprising the steps of:

providing a source of strands composed of carbon fibers impregnated with a hardening substance;

winding said carbon fibers into several layers onto a frame;

providing a source of strands composed of glass fibers impregnated with a hardening substance;

winding said glass fibers into several layers onto said frame about said carbon fibers;

pre-loading said frame to force said carbon and said glass fibers into tension about said frame;

placing said pre-loaded frame with said carbon and glass fibers into a mold having a mold chamber with a sinusoidal shaped contact area ;

curing said carbon and glass impregnated fibers to form a composite spring blank assembly having a sinusoidal profile.

22. The method according to Claim 21, wherein said frame comprises a pair rotating collar at each end of said frame for even tensioning of said carbon and glass fibers during said winding steps.

23. The method according to Claim 22, wherein said pre-loading step further comprising the step of placing a downward force evenly on each of said rotating collars.

24. The method according to Claim 23, wherein said composite spring blank assembly further comprises a neutral axis extending the length of said composite spring blank assembly at the midpoint of said sinusoidal profile.

25. The method according to Claim 24, wherein said composite spring blank assembly further comprises said carbon fiber spanning the length of said composite spring at and below said neutral axis as a result of said pre-loading of said frame.

26. The method according to Claim 21, wherein said composite spring blank assembly further comprises a rectangular cross-section, said cross-section having an equal surface area at all points along the length of said composite spring blank assembly as measured in a plane perpendicular to said neutral axis.

27. The method according to Claim 26, wherein said rectangular cross-section of said composite spring blank assembly further comprises rounded edges formed of a 5/16" radius.